6000
NO-TILL AIR DRILL

OPERATOR'S MANUAL

RD-331V4

Starting at Serial No. DOC-114001

Flexi-coil Ltd.

Canada:

CNH Canada, Ltd.
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S7K 3S5

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Printed in Canada

EMPLOYER / OPERATOR CHECK LIST

In compliance with OSHA Standard 1928.57; all employers are required to instruct all operators, upon initial assignment and at least annually thereafter, on practices for safe operation and servicing of this implement, stressing the following items:

- Keep all guards in place when the machine is in operation.
- Permit no riders on farm field equipment other than persons required for inspection or assistance in machine operation.
- Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.
- Make sure everyone is clear of machinery before starting the engine, engaging the power, or operating the machine.
- Instruct persons on safe operating, moving and transport practices.
- Instruct persons on the importance of proper jack placement before unhooking from the machine in field or transport positions.
- Review lubrication requirements and practices. Check tire pressures.
- Instruct on the importance of safety chain and warning light safety devices, available for this implement.
- Review and be familiar with information detailed in the Safety, Operation, Maintenance and Adjustment sections in this manual.

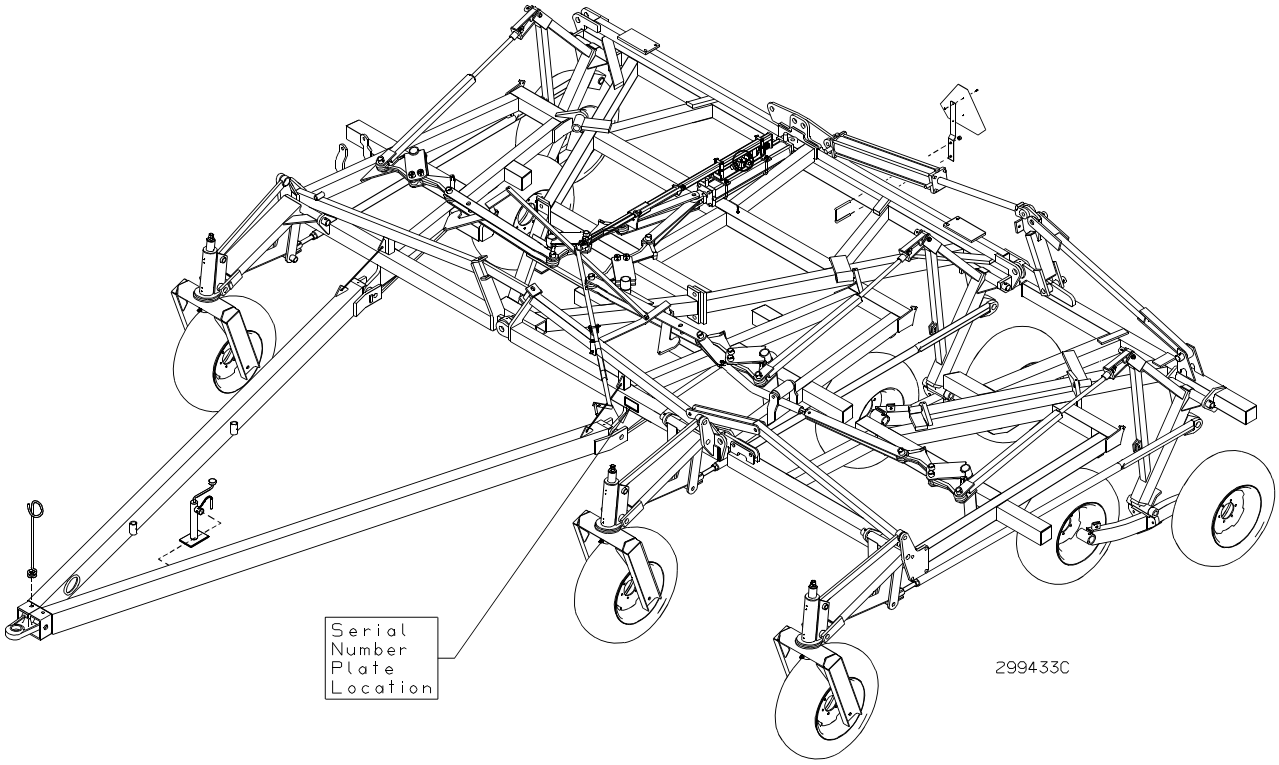
This sign-off chart has been included for your record keeping convenience.

Date:	*Signature of Operator*	*Signature of Employer*

REPAIR PARTS IDENTIFICATION

The 6000 No Till Drill has a Serial Number Plate attached at the location shown to identify the components installed on this machine. The plate looks like the sample with a serial number stamped on.

For easy reference, locate the Serial Number Plate at the location shown on the figure. Record the numbers on this sheet. When requiring repair parts, take this number into your dealer.



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SECTION 1
SAFETY

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SAFETY

SAFETY-ALERT SYMBOL

This symbol is used to denote possible danger and care should be taken to prevent bodily injury.
This symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!**

THIS SYMBOL APPEARS WITH TEXT READING "DANGER!", "CAUTION!", OR "WARNING!" THESE WORDS INDICATE THREE LEVELS OF POSSIBLE HAZARDS, THAT ARE DESCRIBED BELOW.

DANGER!

Indicates an immediate hazardous situation which if not avoided, will result in death or serious injury. The color associated with Danger is RED.

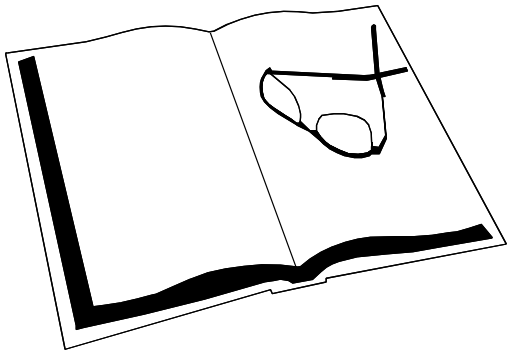
WARNING!

Indicates a potentially hazardous situation that if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

CAUTION!

Indicates a potentially hazardous situation which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. The color associated with Caution is YELLOW.

GENERAL SAFETY PRACTICES



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REVIEW this manual before each season of use.

NEVER allow anyone unfamiliar, untrained or complacent to operate the drill.

ALWAYS USE the jack supplied when unhooking the drill.

NEVER transport the drill at speeds higher than 32 km/hr (20 mph).

It is PREFERRED to transport the drill separately without an air cart attached. This is however, not always practical. If you are transporting the drill with a tow between air cart, the air cart should not be empty. If you are transporting the drill with a tow behind air cart, the air cart should be empty.

BE SURE the drill is securely fastened to a large farm tractor or an air cart that is attached to a large farm tractor before operating hydraulics.

USE EXTREME CARE when making adjustments.

KEEP CHILDREN AWAY from all farm equipment.

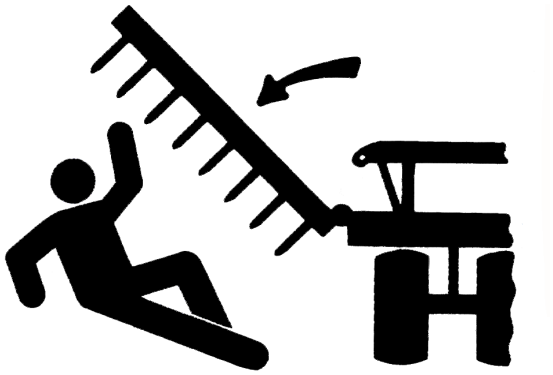
SAFETY DURING OPERATION

DO NOT ALLOW ANYONE ON THE DRILL while operating the drill hydraulics.

NEVER disconnect the tractor from the drill while the drill's wings are raised in the air.

KEEP CHILDREN AWAY from the drill during operation.

NEVER STAND within the radius of the raised wings. Hydraulic or mechanical failure may result in rapid or uncontrolled falling of the wings.



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SAFETY DURING TRANSPORT

CHECK with local authorities regarding transport on public roads. Obey all applicable laws and regulations.

ONLY TOW at a safe speed 32 km/hr (20 mph). Use caution when making corners or meeting traffic.

BE SURE safety lighting is plugged in and that the red tail light(s), amber flashers, and amber signal lights are all working properly.

ALWAYS be certain that no one is behind or around the drill before moving.

BE SURE all safety transport locks are in place before transporting the drill.

BE SURE the reflector decals are clearly visible from all sides of the drill and the Slow Moving Vehicle sign is at the rear of the drill in clear view of overtaking traffic.

BE SURE all the wheel bolts are tight before transporting the drill.

WATCH for power poles and overhead power lines.

ALWAYS lock the tractor drawbar when transporting the drill.

ALWAYS park the drill on level ground and block the wheels before unhooking from the towing vehicle.

NEVER subject the drill to steep side grades while in transport position.

ALWAYS use the hitch jack supplied with the drill when unhooking from the tractor.

BE SURE no upward pressure is exerted on the tractor hitch by the drill hitch before disconnecting.

NEVER brake or decelerate during cornering.

ALWAYS enter corners slowly.

SAFETY DURING SERVICING

SHUT DOWN TRACTOR ENGINE, remove key from tractor ignition and be certain all moving parts have stopped before servicing implement.

ESCAPING HYDRAULIC FLUID HAZARD; escaping hydraulic fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Check/tighten all connections BEFORE applying pressure. Use a piece of cardboard or paper to search for leaks. NEVER use your hand.

IF ANY fluid is injected into the skin, seek immediate medical attention, if not treated within a few hours GANGRENE MAY RESULT.

ONLY service implement when in full field position.

DO NOT OVERINFLATE tires. NEVER lean over a tire while inflating it.

ALWAYS USE proper mounting procedures when mounting a tire to wheel or rim. A tire not seated properly may explode when being inflated causing serious injury or death.

BLOCK wheels to prevent movement when servicing.

BE SURE all safety transport locks are in place before servicing or adjusting opener assemblies or working on the implement.

SAFETY DECALS

KEEP SAFETY DECALS CLEAN. Wipe clean when necessary.

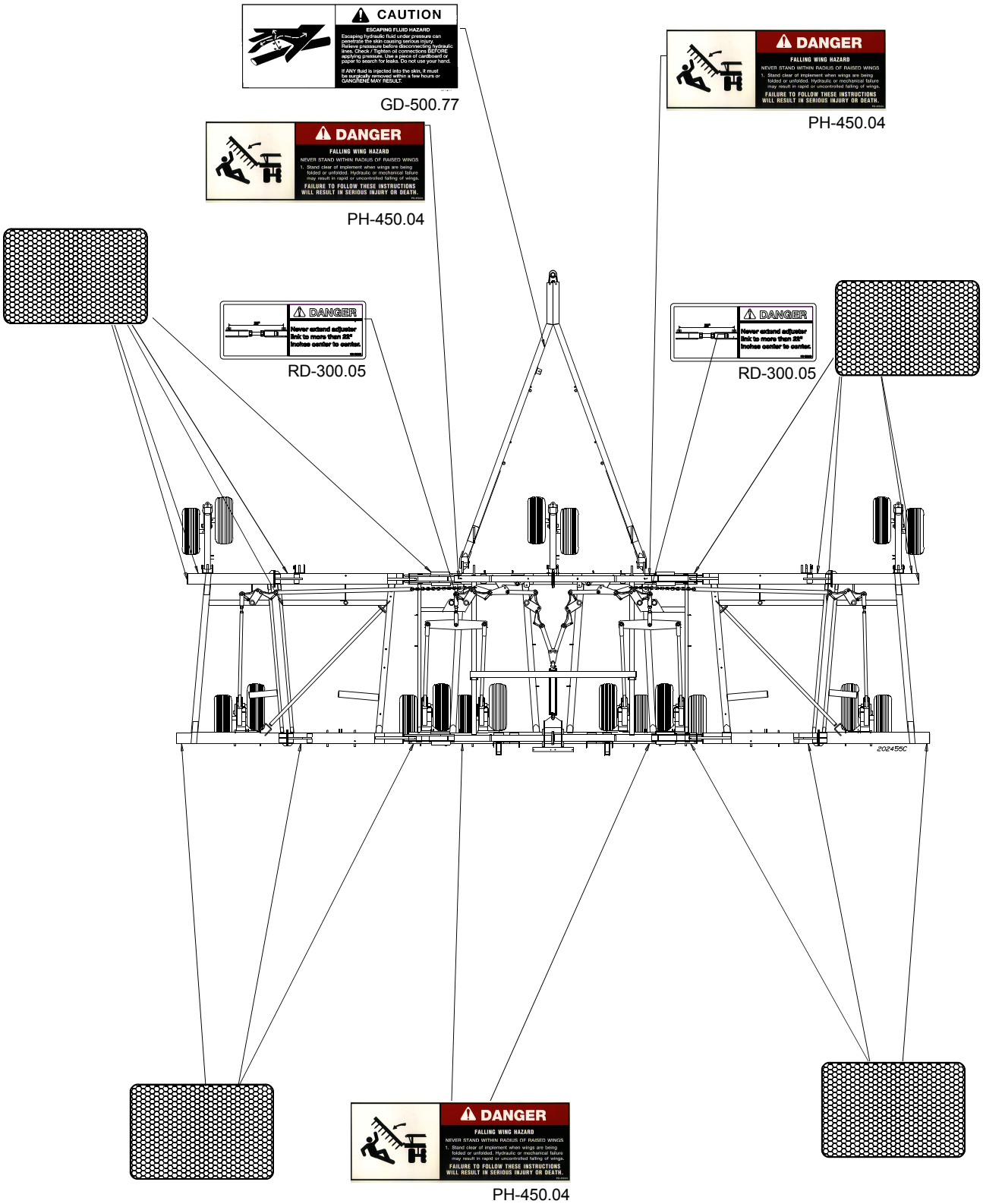
CHECK that the safety decals are not obstructed by the openers. If the decals are covered up, replace in a location that is clear to view.

REPLACE missing or unreadable decals. New decals are available from your dealer.

To replace decals:

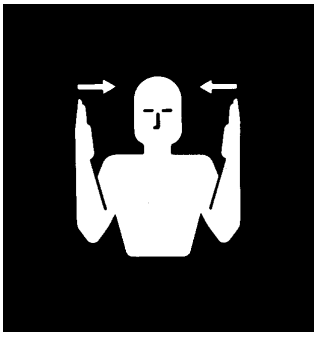
1. Remove the old decal. Clean the area where the new decal will be affixed.
2. Remove the decal backing. Carefully affix the decal to the drill.
3. Work the air bubbles out from under the decal. Use a clean piece of paper or the decal backing itself.

DECAL LOCATIONS

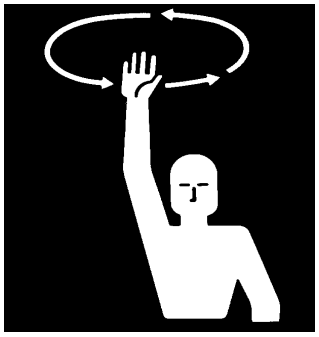


HAND SIGNALS

It is often necessary in agricultural operations to communicate using hand signals when noise or distance inhibit communication by voice. These hand signals, adopted by the Society of Agricultural Engineers, provide an easy means of communication, particularly in the interest of safety.

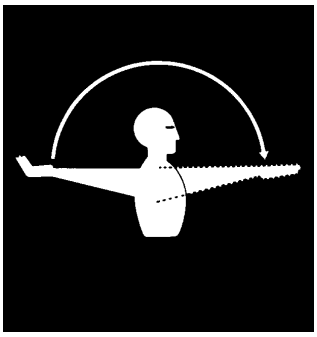


THIS FAR TO GO - Place palms at ear level facing head and move laterally inward to indicate remaining distance to go.



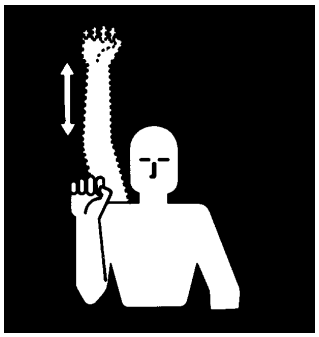
COME TO ME - Raise the arm vertically overhead, palm to the front, and rotate in large horizontal circles.

MOVE TOWARD ME, FOLLOW ME - Point toward person(s), vehicle(s), or unit(s). Beckon by holding the arm horizontally to the front, palm up, and motioning toward the body.

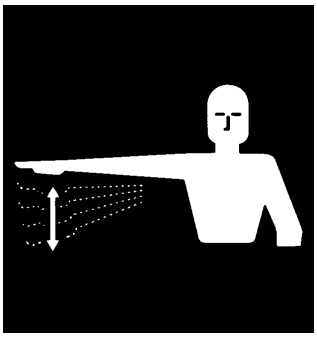


MOVE OUT, TAKE OFF - Face the desired direction of movement. Swing the arm overhead and forward in the direction of desired movement until it is horizontal, palm down.

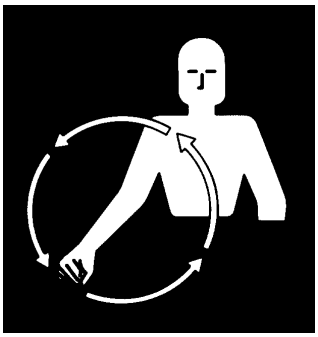
STOP - Raise the hand upward to the full extent of the arm, palm to the front. Hold that position until the signal is understood.



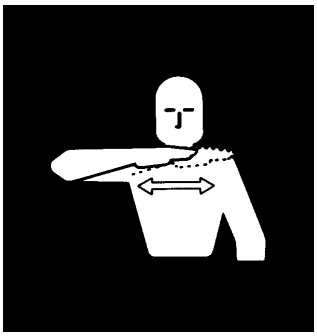
SPEED IT UP, INCREASE SPEED - Raise the hand to the shoulder, fist closed. Thrust the fist upward to the full extent of the arm and back to the shoulder rapidly several times.



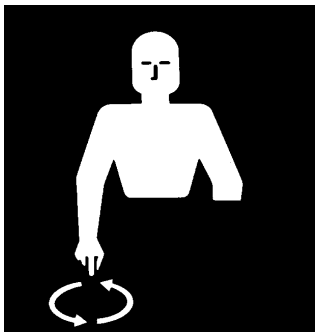
SLOW IT DOWN, DECREASE SPEED - Extend the arm horizontally sidewards, palm down, and wave the arm downward (45° minimum) several times, keeping the arm straight. Do not move the arm above horizontal.



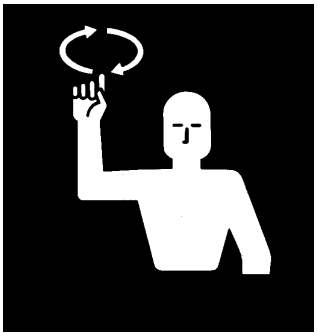
START THE ENGINE - Simulate cranking of vehicles by moving arm in circular motion at waist level.



STOP THE ENGINE - Draw right hand, palm down, across the neck in a 'throat cutting' motion from left to right.



LOWER EQUIPMENT - Make circular motion with either hand pointing to the ground.



RAISE EQUIPMENT - Make circular motion with either hand at head level.

SECTION 2
OPERATION

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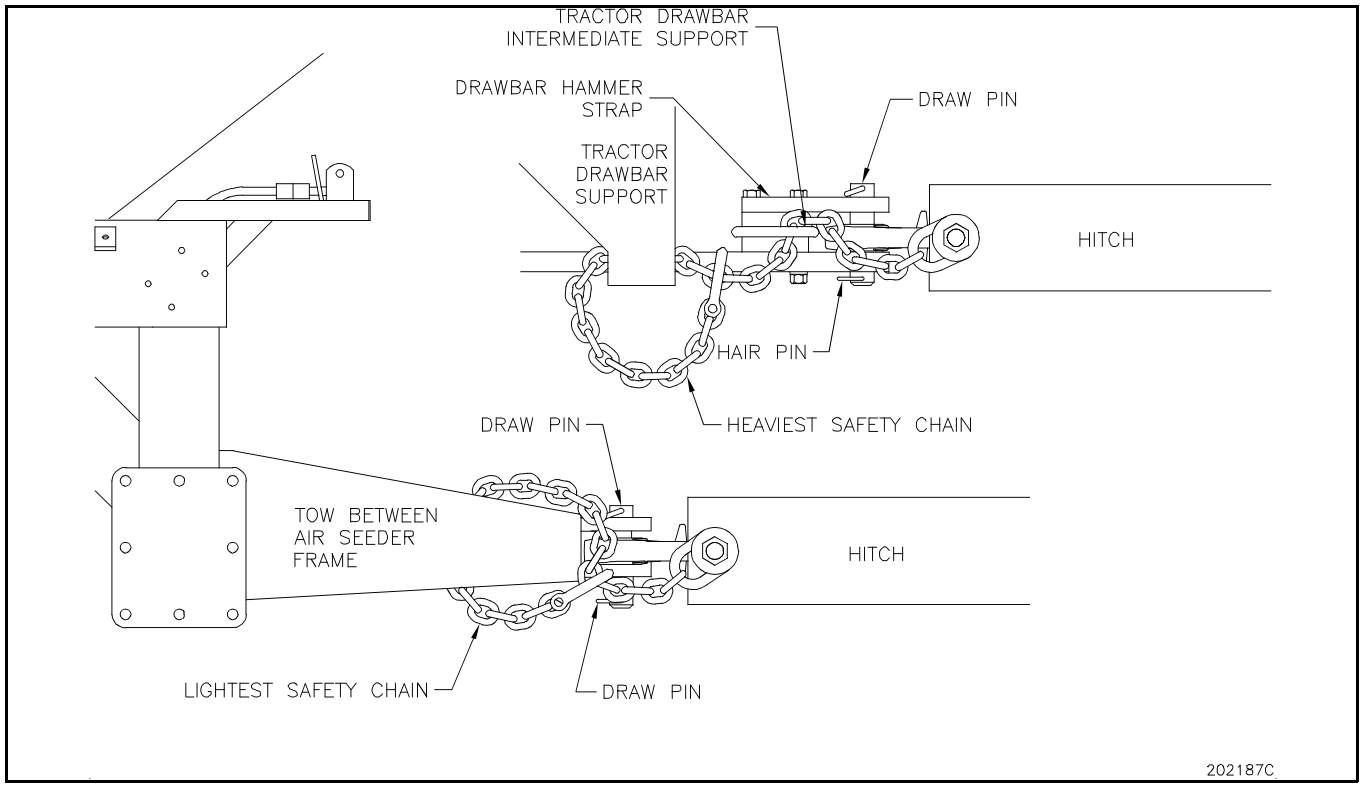
CONNECTING

CAUTION! Lock tractor draw bar in its center position when transporting machine.

Be sure depth control lock is securely engaged before transporting; Be sure floating hitch safety lock is locked before transporting.

Always connect a safety chain between the 6000 and the tractor or air seeder.

1. Always use a clevis hitch on the tractor when towing the drill.
2. Secure the drill to the tractor drawbar or air cart using an adequate draw pin, locked in place with a hairpin or other proper locking device.
3. Retract and rotate jack, pinning jack in horizontal position for storage. Using the pin connector chain, secure the jack handle in the horizontal position to prevent the handle from accidentally swinging down.
4. Connect the safety chain as shown. Be sure the safety chain has enough slack to allow the implement to turn. For a tow behind air cart, connect the heaviest safety chain between the tractor and the air drill. For a tow between air cart, connect the heaviest safety chain between the tractor and the air cart. In either set-up, it may be required to relocate the heaviest safety chain.
5. Connect hydraulics to tractor. To avoid getting dirt in the hydraulic system, wipe off tips before connecting. Raise the depth control hydraulics to maximum height. Manually engage the depth control safety locks.
6. If the air drill is equipped with a tow behind air seeder, connect the cable harness to the connector on the tractor. Connect the air seeder hydraulic hoses to the tractor.



Tractor to Air Drill Safety Chain Connection

FOLDING AND UNFOLDING

NOTE: Read this section before folding or unfolding the air drill.

The air drill is equipped with a manual depth control safety lock system. The safety lock system is a mechanical backup that will stop the drill from suddenly dropping should the depth control hydraulic system fail (i.e., hydraulic hose failure).

CAUTION!

Keep everyone clear of the machine when folding or unfolding wings.

Be sure cylinder and attaching hoses are fully charged with oil before operating system. Failure to do so will allow wings to fall rapidly.

To avoid injury or death, do not contact electric lines.

To avoid injury or death stand clear of machine when wings are being folded or unfolded. Mechanical or hydraulic failure can allow wings to fall rapidly.

To avoid injury or death, do not adjust while machine is in motion.

To avoid injury or death, ensure mechanical lock-up hardware is installed before transporting or servicing machine. Hydraulic failure can allow openers to fall rapidly.

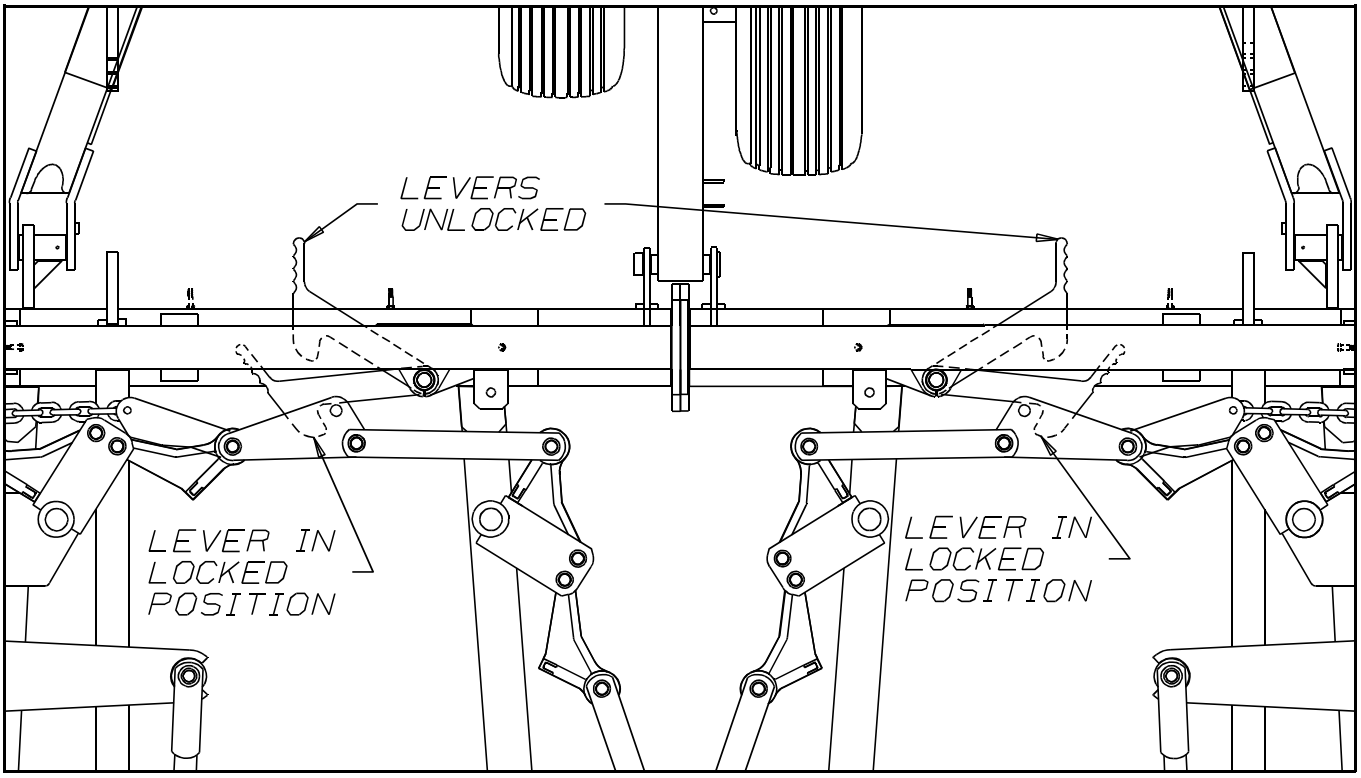
IMPORTANT: Never try to wing up the drill without having the frame raised all the way. If the drill is winged up with the frame down, damage to the machine could result. Never lower the frame with the drill in transport position.

DEPTH CONTROL SAFETY LOCK

The depth cylinder safety lock is latched and unlatched by rotating a lever located on the front of the center section.

1. Raise the implement to the maximum height using the depth control hydraulics.
2. Rotate lever until contact is made with the pin to engage the depth control safety lock. There should be enough friction that the safety lock will not rotate without a considerable hand applied force. Adjust the lock nut when necessary.

NOTE: Be sure the safety lock is engaged when working under the machine.

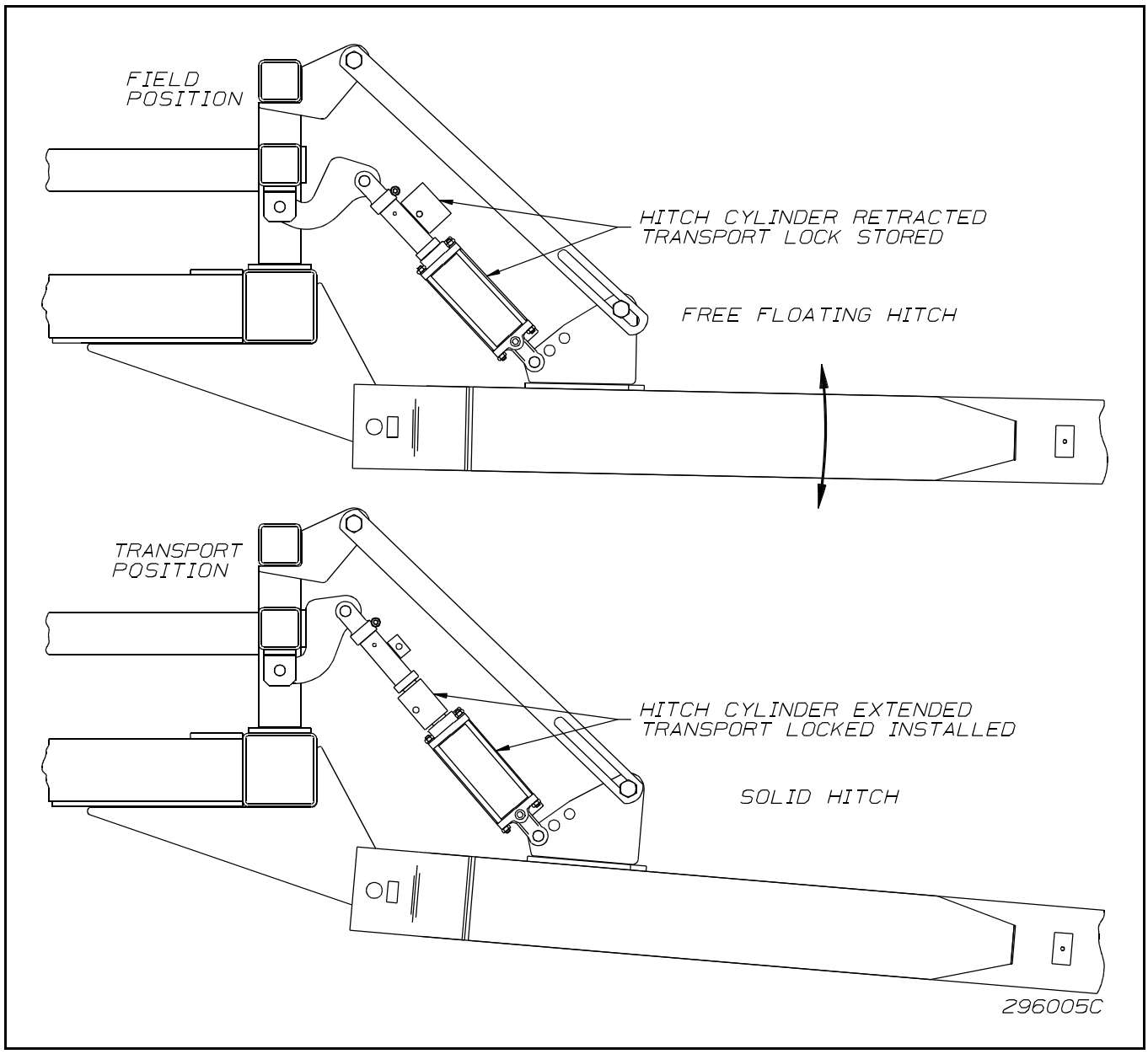


Depth Control Safety Lock

FLOATING HITCH SAFETY LOCK

The floating hitch safety lock is put in place when the hitch cylinders are in the fully extended position.

1. With the drill in field position, fully raised, move the transport lock from storage position to transport position as shown.



Floating Hitch Safety Lock

WINGING UP

1. Activate the depth control hydraulic circuit to raise the implement to maximum height.

2. Engage the depth control safety lock.

3. Engage the floating hitch safety lock.

4. Activate the wing lift circuit and raise the implement to full transport position.

IMPORTANT: Never try to wing up the drill without having the frame raised all the way. If the drill is winged up with the frame down, damage to the machine could result. Never lower the frame with the drill in transport position.

WINGING DOWN

1. With the depth control safety lock in place, activate the wing lift hydraulics to lower the wings.

2. Raise the implement to the maximum height using the depth control hydraulics. Return the depth cylinder safety lock and the floating hitch safety lock to the unlocked position.

FIELD OPERATION

DEPTH CONTROL VALVE AND OPERATING DEPTH ADJUSTMENTS

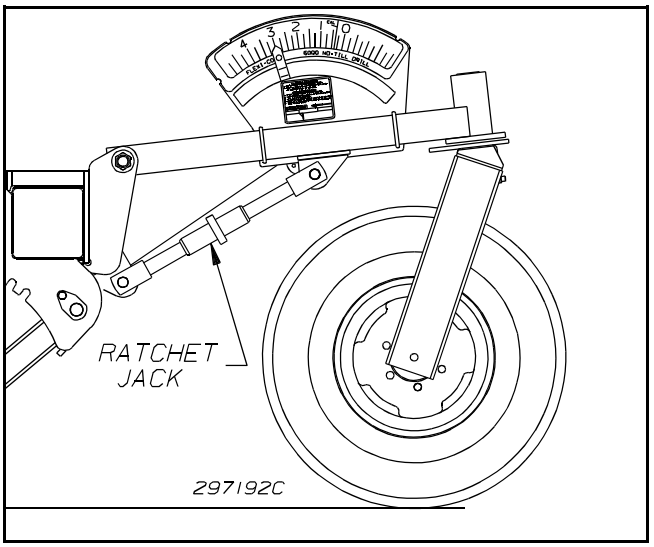
Before adjusting the drill for operating depth make sure that the machine has been leveled and that the tires have the correct operating pressure.

IMPORTANT: Never adjust the ratchet jacks when weight is on the gauge wheels. Failure to do so may damage to the machine

1. Once the drill has been leveled (refer to the Adjustments Section) the depth adjustment is performed by adjusting the ratchet jacks on the front gauge wheels. The center gauge wheel is linked to the depth stop valve on the depth cylinder via a cable, pulley linkage. As the machine is lowered the depth cylinder pin moves toward the depth stop tab. Once contact is made, the depth stop tab activates another tab that closes the depth stop valve, stopping the frame at the set operating height.

2. To set the operating depth, activate the depth control hydraulic circuit to raise the implement to maximum height.

3. Adjust the ratchet jacks to reference the actual seed depth. (If a seeding depth of three inches is desired, set the scale to 3). Be sure all ratchet jacks line up with the same reference number on the scale. This will be a starting point but will be affected by soil conditions. In firm conditions the gauge reading will show the seeding depth with the greatest accuracy.



Ratchet Jack Adjustment

NOTE: The indicator on the gauge wheel will shift when weight is on the gauge wheels. This shifting is normal and has been taken into account during the initial leveling procedure.

GENERAL FIELD OPERATION

The correct speed for your seeding operation is dependent upon the following items:

1. The acceptable amount of soil disturbance.
2. The amount of ridging caused by the rear openers.
3. The amount of unnecessary strain placed on the machine.

The speed selected will be dependent upon these factors and will vary with soil conditions. Operating speed is usually from 6.4 km/hr to 9.7 km/hr (4 to 6 mph).

When working on rough ground, be sure to reduce the operating speed as this causes unnecessary strain on the machine.

Cornering with the openers in the ground can put severe stress on the openers. It is strongly recommended that the ground engaging openers be lifted out of the ground before cornering with the unit.

For uniform seeding it is essential that there is adequate frame weight to keep the openers in the ground. Keeping the openers in the ground is dependent upon soil conditions and seeding depth. The frame weight can be changed to match your field conditions by adding or removing weights from the rear bar on the center and wing sections. Before changing the frame weight ensure that the Barton Opener has been correctly adjusted. See the Barton Opener operators manual for details.

Be sure the wing lift cylinders are fully extended when in field position. This will allow the machine to float and follow the contours of the field.

TRANSPORTING

WARNING! 

Transporting the towed equipment with an underweight towing vehicle could cause a loss of control during transport or braking, resulting in serious injury or death.

Transporting the towed equipment at speeds greater than 32 km/hr (20 mph) could result in a loss of control and serious injury or death.

Be sure depth control safety lock and floating hitch safety locks are engaged before transporting. To prevent accidental disconnection, use a safety chain between tow vehicle and air drill hitch when transporting on public roads.

IMPORTANT INFORMATION ABOUT TRANSPORTING

1. As a general rule, the weight of the towed equipment should be less than or equal to the weight of the towing vehicle.

2. Under no circumstances should the weight of the towed equipment be more than 1.5 times the weight of the towing vehicle.

3. A tow between air cart does not give a lot of stability to the drill during transport. Be especially careful when your tow between air cart is empty.

4. Some guidelines to follow when transporting:
   - The towing vehicle MUST be able to control the moving mass.
   - The towing vehicle MUST be able to brake (stop) when required.
   - AVOID sudden stops.
   - Enter turns at a SLOW SPEED.
   - DO NOT brake or decelerate during cornering.
   - AVOID sharp turns to reduce side loading on the rear wheels of the drill.
   - AVOID steep slopes.
   - DO NOT cut through ditches or ravines.

TRANSPORTING THE DRILL

1. Behind a Towing Vehicle Other Than a Tractor

- Never transport with an air cart connected to the drill.
- Determine if the towing vehicle is heavy enough to transport the towed equipment.
- The towing vehicle must have a clevis hitch.
- Secure the hitch with a 7/8" diameter or greater draw pin with a safety catch.
- A safety chain with a strength rating equal to or greater than the gross weight of the drill must be used.
- Be sure a slow moving vehicle (SMV) sign is properly installed and is clearly visible at the rear of the drill.
- Use the drill safety lights unless it is prohibited by law.
- Observe local restrictions.

2. Behind a Tractor

- Secure hitching.
- Lock the tractor drawbar in its centered position.
- Determine if the tractor is heavy enough to transport the towed equipment.
- Be sure a slow moving vehicle (SMV) sign is properly installed and is clearly visible at the rear of the towed equipment.
- Use the transport lights on the rear piece of towed equipment unless it is prohibited by law.
- Observe local restrictions.

CALCULATING THE MINIMUM TOWING VEHICLE WEIGHT FOR SAFE TRANSPORT

1. Add the weight of all the towed equipment together. If you are transporting a drill which is connected to an air cart, add the two weights together.

NOTE: The table below is only an example of towed equipment weights. Refer to the Specifications Section in the Air Cart Operator's Manual for the air cart weight.

NOTE: If you are transporting a tow behind air cart, it is preferable to transport with the air cart tanks empty. However, it is realized that this is not always practical.

TOWED EQUIPMENT	EXAMPLE
230 Bushel AIR CART (Full with wheat @ 48 lb/ft³)	9,700 kg (21,350 lb)
40 FT Air Drill (7.5" Spacing)	11,600 kg (25,500 lb)
TOTAL COMBINED WEIGHT	21,300 kg (46,850 lb)

Estimated Towed Equipment Weights

2. Divide the total combined weight of the towed equipment by **1.5** to determine the minimum towing vehicle weight required for safe transport.

EXAMPLE: $\frac{21,300 \text{ kg } (46,850 \text{ lb})}{1.5}$ = 14,200 kg (31,230 lb) = minimum towing vehicle weight required for safe transport

3. Refer to the towing vehicle Operator's Manual to determine if its weight is greater than the minimum vehicle weight required.

NOTE: If the towing vehicle's weight is not greater than the minimum vehicle weight required, you must do one of the following:

- Transport the drill and the air cart separately.
- If you are transporting a tow behind air cart, transport with the air cart empty.

DISCONNECTING

CAUTION! Always park implement on level ground and block wheels before attempting to unhook.

Escaping fluid hazard -- Escaping hydraulic fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Check/tighten all connections before applying pressure. Use a piece of cardboard or paper to search for leaks. Never use your hand.

If any fluid is injected into the skin, seek immediate medical attention; if not treated within a few hours gangrene may result.

DISCONNECTING IN FIELD POSITION - IMPLEMENT RAISED

1. Fully raise the machine and engage the depth control safety lock and the floating hitch safety lock. Block the wheels to prevent movement.
2. Rotate the jack down from its storage position and pin it in a vertical position.
3. Extend the jack to remove the weight from the tractor or air seeder.
4. Disconnect the hydraulic hoses.
5. Unhook the safety chain and unplug the lighting cable harness (if equipped).
6. If the air drill is equipped with a tow behind air seeder, disconnect the cable harness from the tractor. Disconnect the air seeder hydraulic hoses from the tractor.
7. Remove the draw pin and carefully drive away.

DISCONNECTING IN FIELD POSITION - IMPLEMENT LOWERED

1. Raise the implement to the maximum height using the depth control hydraulics. Return the depth cylinder safety lock and the floating hitch safety lock to field or unlocked position.
2. Lower the implement until the openers are resting on the ground.
3. Rotate the jack down from its storage position and pin it in a vertical position.
4. Extend the jack to remove the weight from the tractor or air seeder.
5. Disconnect the hydraulic hoses.
6. Unhook the safety chain and unplug the lighting cable harness (if equipped).
7. If the air drill is equipped with a tow behind air seeder, disconnect the cable harness from the tractor. Disconnect the air seeder hydraulic hoses from the tractor.
8. Remove the draw pin and carefully drive away.

DISCONNECTING IN TRANSPORT POSITION

The air drill may be disconnected in the transport position. To avoid damage to the machine and to avoid movement after disconnection, it is recommended that the machine **ALWAYS** be disconnected with the depth control locked in the 'up' position, with the floating hitch safety lock in place and the wheels blocked to prevent movement during disconnection.

1. Activate the depth control hydraulic circuit to raise the implement to maximum height.
2. Engage the depth control safety lock.
3. Engage the floating hitch safety lock.
4. Activate the wing lift circuit and raise the implement to full transport position.
5. Block the wheels to prevent movement.
6. Rotate the jack down from its storage position and pin it in a vertical position.
7. Extend the jack to remove the weight from the tractor or air seeder.
8. Disconnect the hydraulic hoses.
9. Unhook the safety chain and unplug the lighting cable harness (if equipped).
10. If the air drill is equipped with a tow behind air seeder, disconnect the cable harness from the tractor. Disconnect the air seeder hydraulic hoses from the tractor.
11. Remove the draw pin and carefully drive away.

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SECTION 3
MAINTENANCE

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SERVICING SAFETY PRECAUTIONS

DANGER!

Stand clear of implement when wings are being folded or unfolded. Hydraulic or mechanical failure may result in rapid uncontrolled falling of the wings. Failure to follow these instructions may result in serious injury or death.

CAUTION!

Tractor engine should be stopped and wheels blocked to prevent any implement movement during servicing.

Always be sure depth control safety lock and hitch cylinder locks are in place when servicing implement

Always be sure wings are in field position before servicing the implement.

Escaping fluid hazard -- escaping hydraulic fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic lines. Check/tighten all connections before applying pressure. Use a piece of cardboard or paper to search for leaks. Never use your hand.

If any fluid is injected into the skin, seek immediate medical attention; if not treated within a few hours gangrene may result.

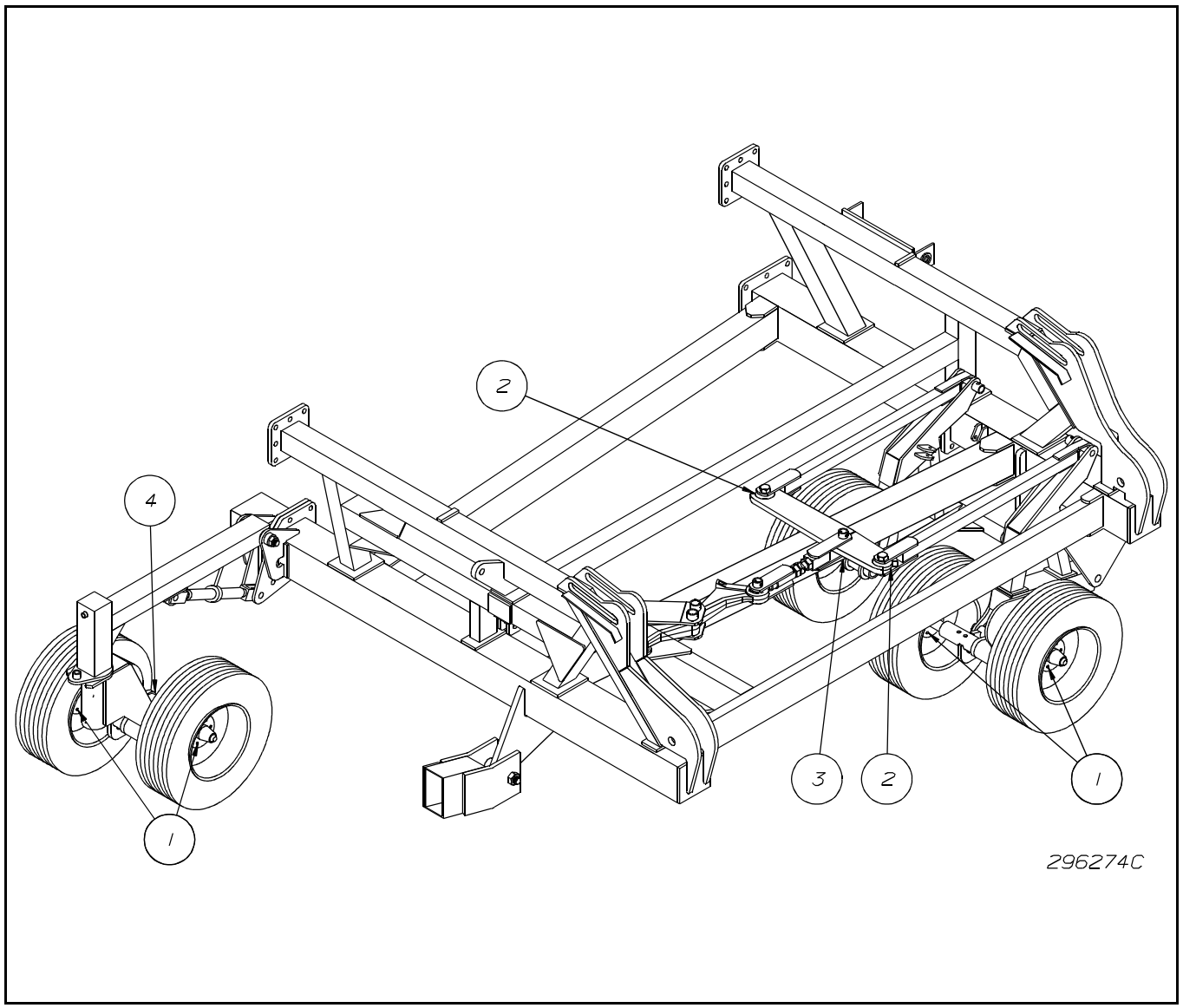
DAILY MAINTENANCE (Every 10 Hours)

1. Visually inspect wheel bolts for looseness. Torque wheel bolts after the first 10 hours of operation and frequently thereafter. Refer to the Specifications Section for tire pressure and wheel bolt torque information.

2. Grease the ball sockets (2) located on each end of the load leveler bar (2 load leveler bars per machine).

3. Grease the level bar pivot pin (3) (2 pins per unit). Grease zerk is located on the top side of the pin.

4. Grease the caster wheel walking beams (4) (1 [optionally 3] walking beams per machine).



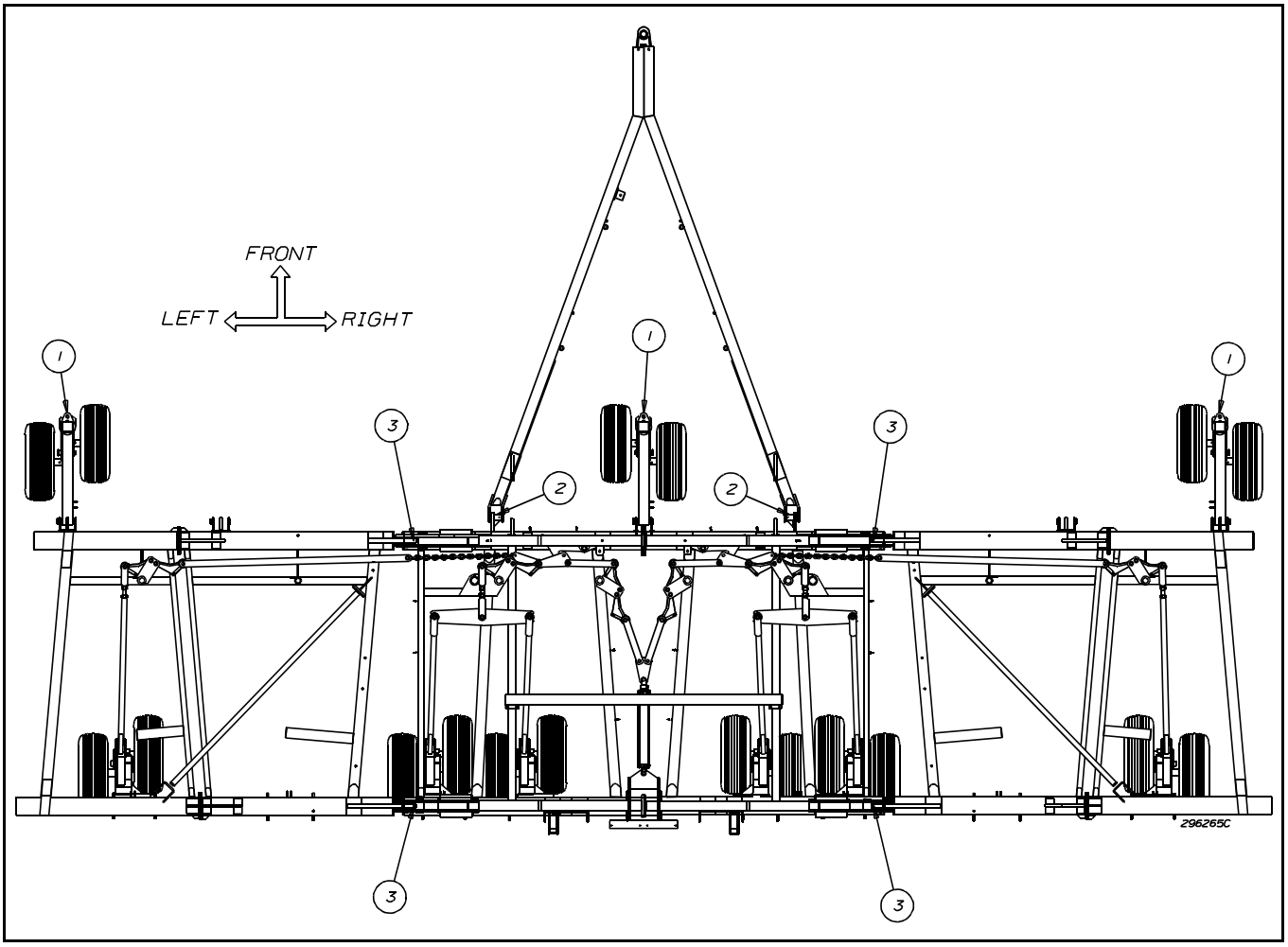
Daily Maintenance Points

WEEKLY MAINTENANCE (Every 50 Hours)

1. Perform all daily maintenance items.

2. Grease the front gauge wheel caster pivots (1); 2 zerk locations per caster wheel (3 gauge wheels per implement).

3. Grease the front and rear wing hinges (3); 1 zerk location per hinge pivot (4 locations per implement).

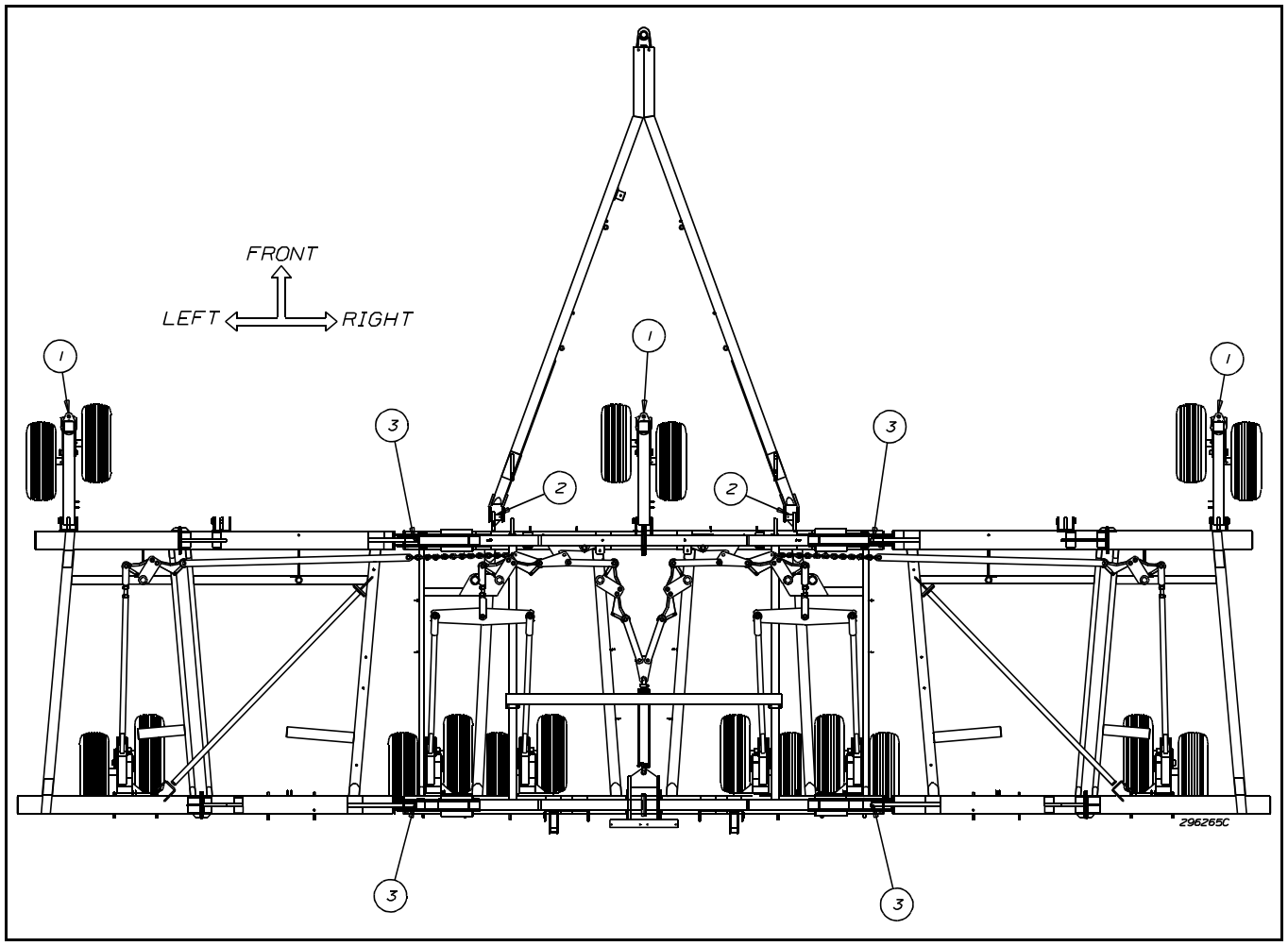


Weekly Maintenance

SEMI-ANNUAL MAINTENANCE (Every 200 Hours)

1. Perform all daily and weekly maintenance items.

2. Grease the hitch pole pivots (2); 1 zerk location per hitch pole (2 hitch poles per implement).



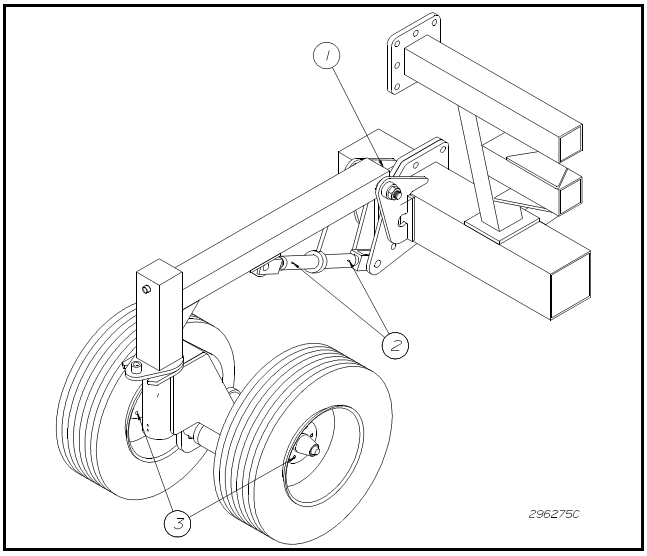
Semi-Annual Maintenance

2. Grease the gauge wheel pivot bushings (1); 1 grease zerk per gauge wheel (3 gauge wheels per unit).

3. Grease the ratchet jacks (2) located on each gauge wheel assembly; 2 grease zerks per ratchet jack (3 ratchet jacks per unit).

4. Grease all wheel hubs (3) and inspect for looseness.

5. Grease the transport lock pivots located on the front bar of the center section; 1 grease zerk per transport lock (2 transport locks per unit).



Grease Gauge Wheel and Ratchet Jacks

BEFORE SEASONAL OPERATION OR BEFORE STORAGE

1. Perform or check items listed under daily and weekly maintenance.

2. Inspect the implement. Be sure all components are ready for the field. Check the frame for any signs of structural cracks.

3. When placing the implement in storage for more than one month, coat all exposed hydraulic ram surfaces with a thick oil to protect them from the elements.

4. Check the implement, including openers, for loose bolts and tighten.

DANGER!

To avoid personal injury or death, use utmost caution when adjusting the opener assemblies since the trip spring is in compression. Do not attempt to remove the spring from the tension link assembly. This unit was factory assembled and is under extreme load; in no circumstance should this assembly be field disassembled.

MAINTENANCE TABLE

Refer to the table below for routine maintenance and lubrication intervals. Service items below either daily, weekly or annually or at the hours indicated in the table. Copy this maintenance table to continue your records.

DATE												
SERVICED BY												
10 HOURS (DAILY)												
GREASE - Load level bar ball sockets												
GREASE - Level bar pivot pin												
GREASE - Caster wheel walking beams												
DATE												
SERVICED BY												
50 HOURS (WEEKLY)												
GREASE - Front gauge wheel caster pivots												
GREASE - Hitch pole pivots												
GREASE - Front and rear wing hinges												
CHECK - Wheel bolts												
CHECK - Tire pressures												
DATE												
SERVICED BY												
200 HOURS (SEMI-ANNUALLY)												
GREASE - Gauge wheel pivot												
GREASE - Ratchet jacks												
GREASE - Wheel bearings												
GREASE - Transport lock pivots												
DATE												
SERVICED BY												
500 HOURS (ANNUALLY)												
CHECK - Machine for loose bolts												
CHECK - Frame for cracks												
CHECK - Openers for loose bolts												
REPACK - Wheel hubs												

CHANGING TIRES

DANGER! To prevent personal injury when changing tires on the implement, always block raised section. Be sure section is stable before proceeding. Never rely on a jack or hydraulic device to support raised implement

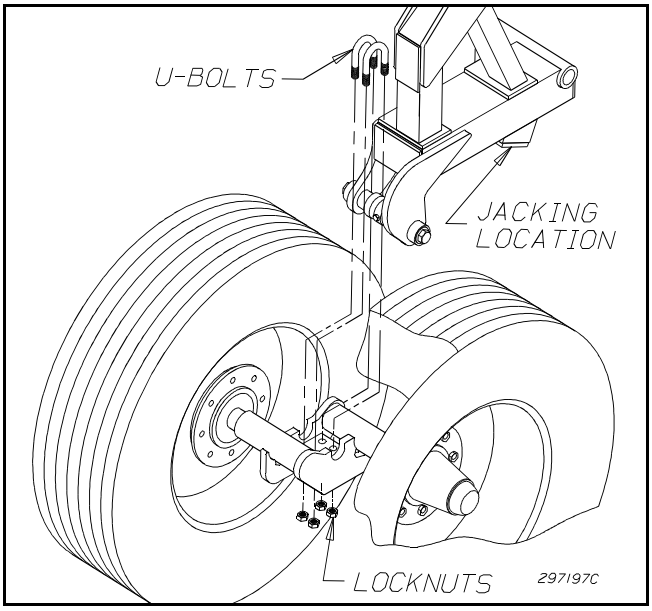
The tires on the center section or the air drill are difficult to change if the correct procedure is not followed. Refer to the following instructions when changing tires. **Note that center section tires can be changed while the machine is in transport position, however if at all possible lower the unit into field position before changing center section tires.**

1. To ensure safety when jacking the unit, each wheel standard is equipped with a jack stand mount. Using a minimum of a 10 ton hydraulic jack and the necessary blocking, jack the implement until the weight is relieved from the walking axle. Refer to the figure for the for jack stand mount location.

2. If any wing tire or center section outside tires are being changed, remove the wheel bolts and replace the tire. If any of the center section inside tires are being changed, the walking axle must be separated from the wheel standard before the tire can be removed. To separate the walking axle remove the 5/8" x 1 13/16" round u-bolts as shown.

3. Manoeuver the wheels and walking axle out from under the unit. Change the tire.

4. Reposition the wheels and walking axle and bolt in place. Replace the 5/8" locknuts with new locknuts. Be sure to use the identical type of locknuts that were removed from the machine (i.e., one way locknuts only). Torque the nuts to 217 N-m (160 lbf-ft).



Tire Changing Procedure

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SECTION 4
ADJUSTMENTS

CONTENTS OF THIS SECTION

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AIR DRILL LEVELING

CAUTION!

Disengage power and shut down tractor, be certain all moving parts have stopped before servicing, adjusting, cleaning or unclogging the equipment.

Always be sure air drill is hooked to a stable device before raising or lowering wings.

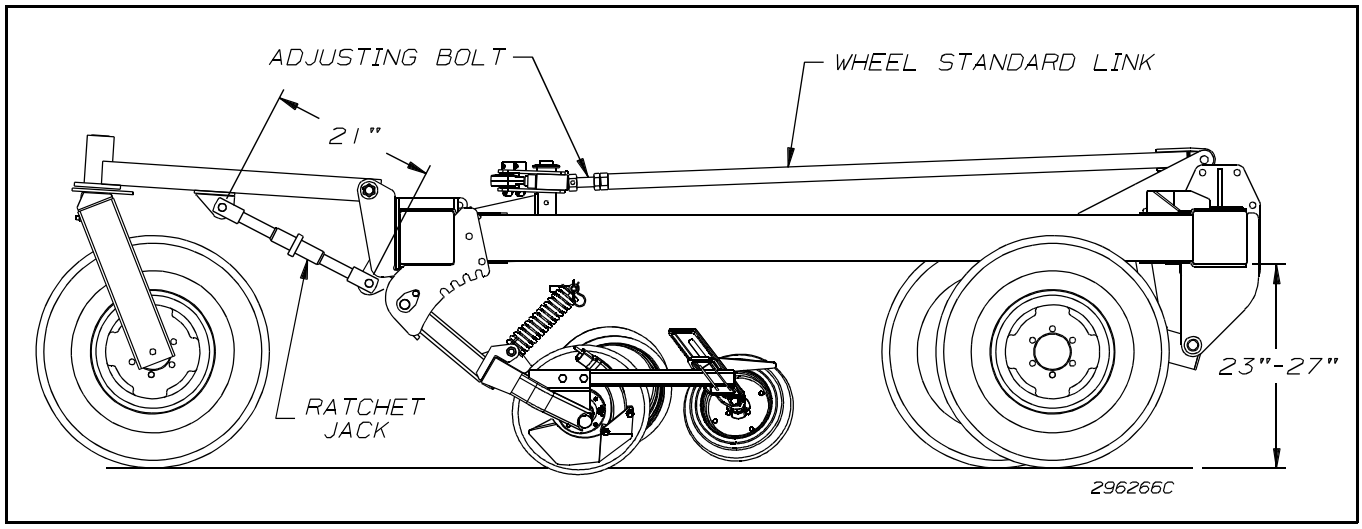
Never operate wing lift system when anyone is within radius of the wings.

Always follow correct operating procedure when folding and unfolding wings.

To begin leveling, start with the center section. Leveling should be done from left to right and then from front to back. When the center section has been leveled, level the wings.

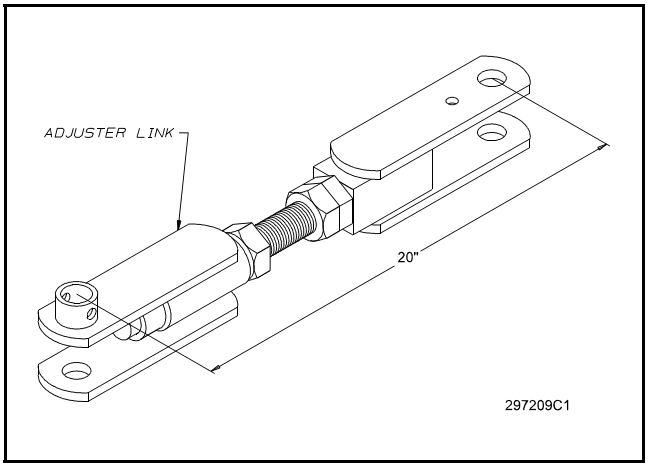
Final leveling should be done in the field with the drill at working depth.

CENTER SECTION INITIAL LEVELING



Side View of the Air Drill

1. Before leveling the machine, be sure tires have the correct operating pressures.
2. Locate the air drill on level ground.
3. Lower the wings and be sure the wing lift cylinders are fully extended.
4. Check that all caster wheel ratchet jacks are adjusted to a pin center-to-center distance of 533 mm (21").
5. Check that the left adjuster link assembly on the center section measures 508 mm (20") from pin center to pin center. If it does not, adjust as necessary. Refer to the assembly manual for detailed instructions.



Adjuster Link Initial Setting

WARNING! Never extend the adjuster link to exceed 22 inches center to center between pins. Failure to follow these instructions could result in separation of the adjuster link and tension link causing rapid uncontrolled falling of the implement. Failure to follow these directions could cause serious bodily injury.

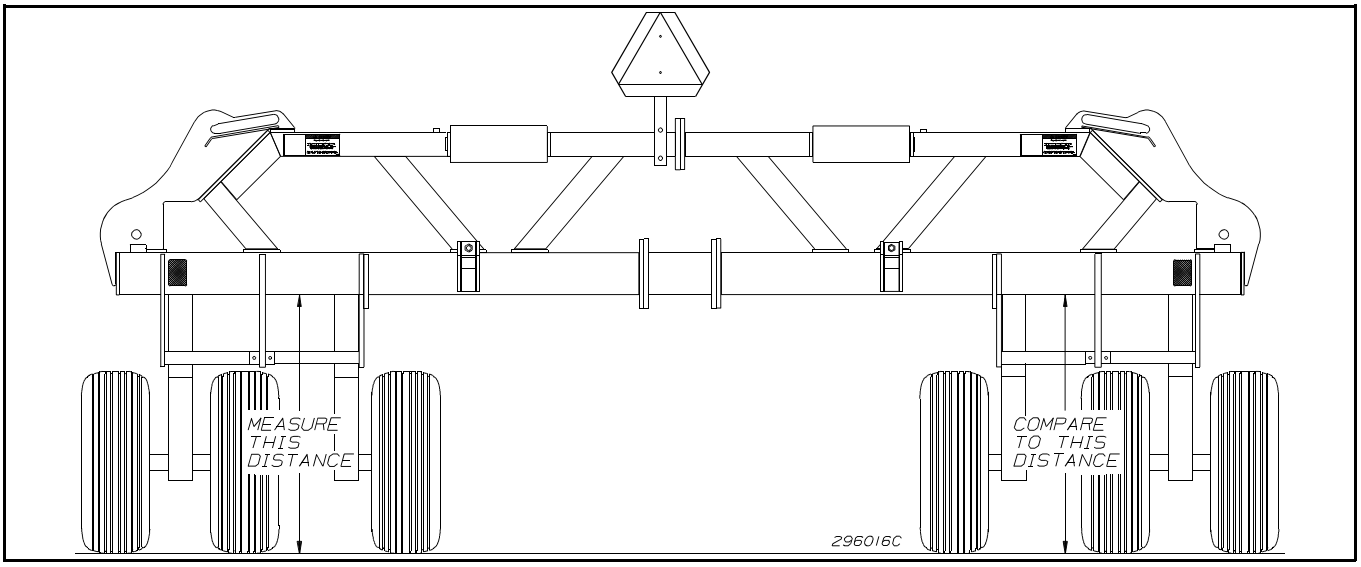
6. Release all the down pressure springs from the openers.

NOTE: This is a one time leveling operation.

7. Lower the machine so the rear bar is 52 to 69 cm (23" to 27") from the ground surface.

8. Measure the distance from the bottom of the rear bar to the ground on the left side of the center section.

9. Measure the distance from the bottom of the rear bar to the ground on the right side center section.



Measure Rear Bar Height and Compare Distances

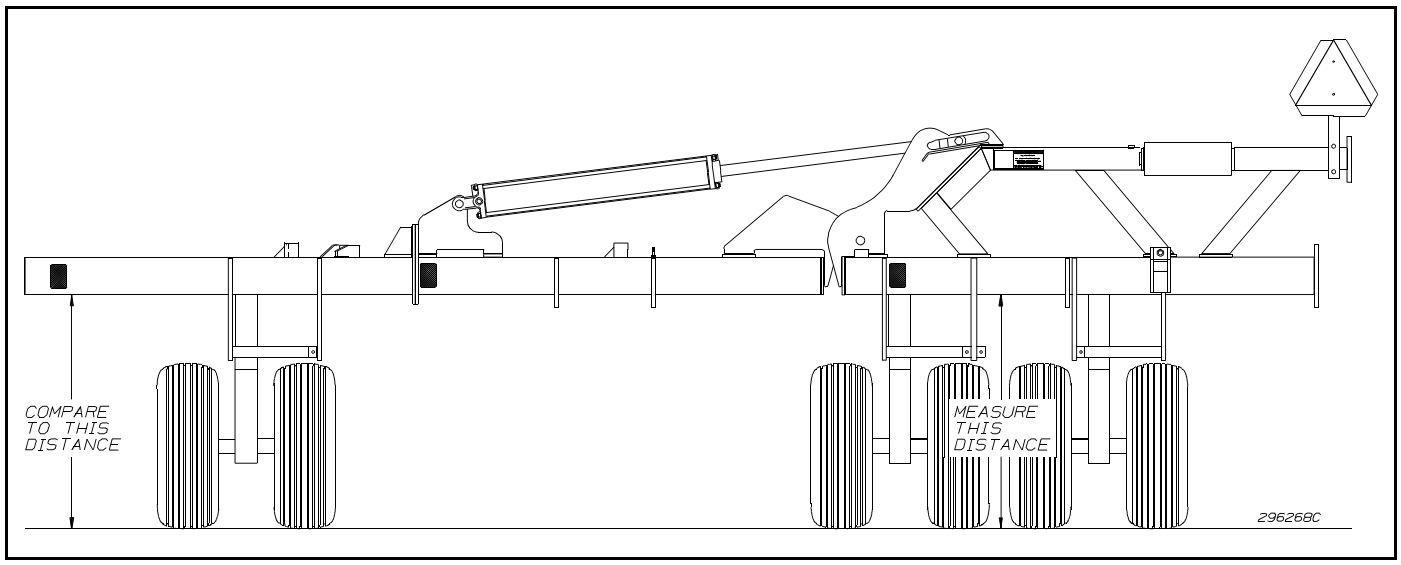
10. Adjusting the bolt on the right adjuster link to raise or lower the right side until the distance measured in step 8 is the same as the distance measured in step 9. Repeat as necessary.

11. Lock jam nuts and proceed to the wing initial leveling procedure.

WING INITIAL LEVELING

1. Before beginning to level wings, make sure the center section initial leveling has been completed and the center section rear bar is level.

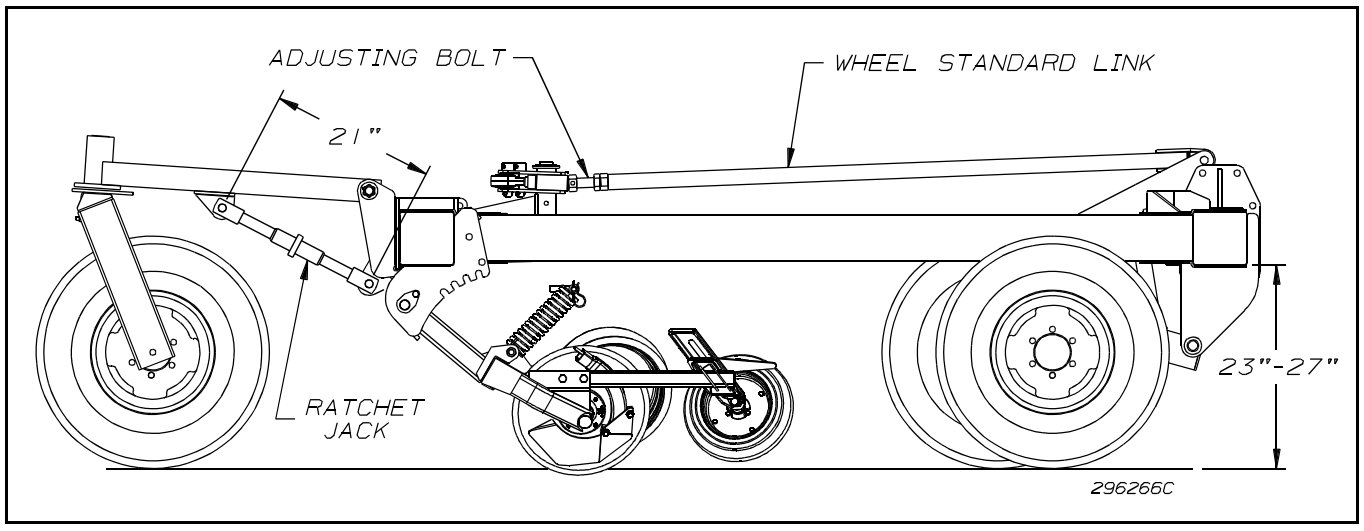
2. Measure the distance from the bottom of the rear bar to the ground on the left side of the center section. Compare distance with the outer measurement on the wing.



Leveling Wings

3. Adjust the bolt on the wheel standard link to raise or lower the wing until the center frame distance is equal to the distance of the wing frame.

   NOTE: Do not allow the threaded portion to exceed 14 cm (5.5 inches) in length. For drills with serial number DOC-114040 and less, do not allow the threaded portion to exceed 9 cm (3.5 inches) in length.



Side View of the Air Drill

4. Repeat steps 2 and 3 for the right hand wing. Lock all jam nuts once leveling is complete.

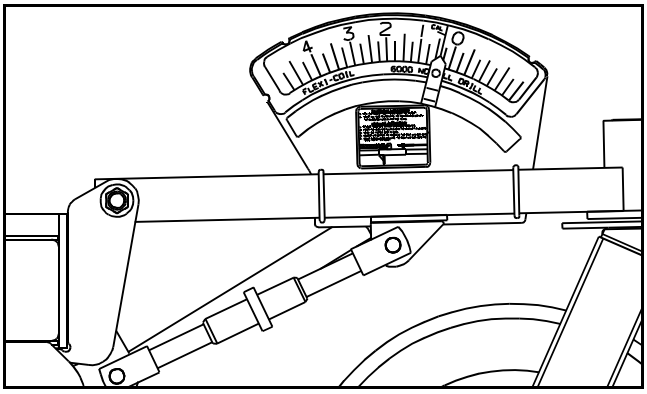
SETTING THE FRAME HEIGHT

The depth gauge is mounted to the front gauge wheels and is intended as a reference only. Actual working depth of the air drill should be set with the ratchet jacks during field operation and checked periodically. Set the depth gauge using the following procedure.

1. With the down pressure springs of the openers disconnected, place the air drill fully raised in field position.

2. Adjust all ratchet jacks on the center and wing gauge wheels until the ratchet jacks measure 533 mm (21") center to center.

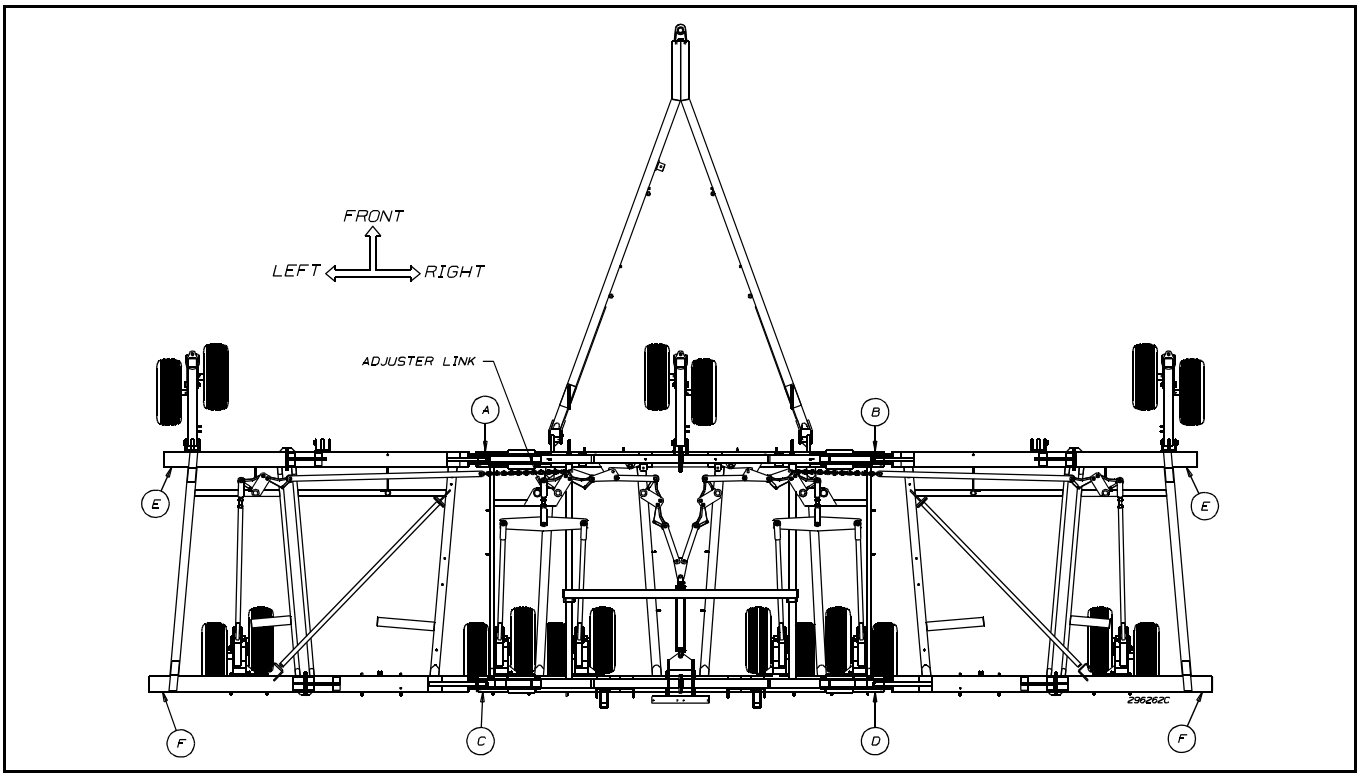
3. Calibrate all depth scales by moving the faceplate until the indicator lines up with the calibration line. Tighten the 5/16" U-bolts to secure depth scale in place.



Calibrating the Scale

4. Lower the machine until the depth stop valve is activated.

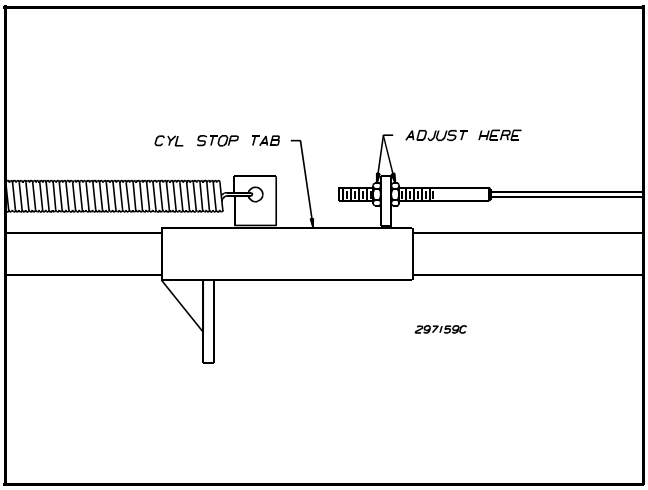
5. Measure frame height in position “C” and compare to the frame height at position “A”.



Leveling Center Section

6. If the front to back measurements are not equal adjust the cylinder depth stop tab accordingly. If the machine is low in the back adjust the cylinder stop tab towards the rear of the machine. If the machine is high in the back adjust the cylinder stop tab towards the front of the machine

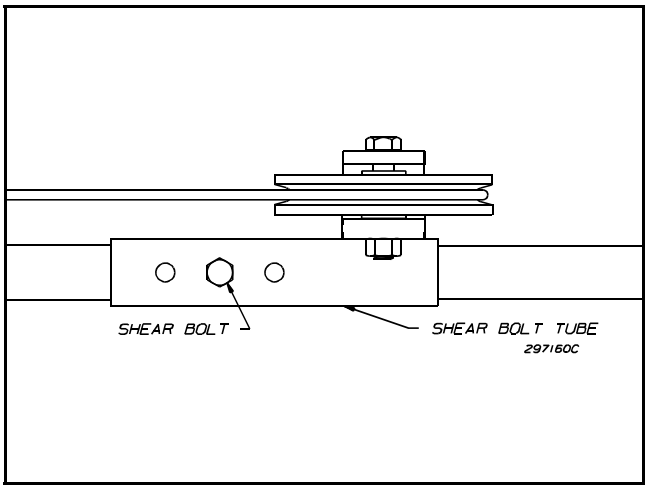
7. Repeat steps 4 - 6 until the machine is level front to back.



Cylinder Stop Tab Adjustment

8. If there is not enough adjustment on the threads of the depth stop cable reposition the shear bolt to a new hole in the shear bolt tube and continue with step 6.

9. Reattach the down pressure springs on the openers and adjust the frame to desired height.



Shear Bolt Tube Adjustment

FINAL LEVELING

The initial center section and wing leveling will provide adequate frame leveling. However, to ensure accurate seeding depth from your implement, final adjustments should be carried out in the field under normal field conditions. The openers system provide additional depth control directly behind where the seed is placed completing the depth control no-till seeding system. The final depth control adjustments should be done with the openers. Refer to the Opener Operator's manual for complete instructions.

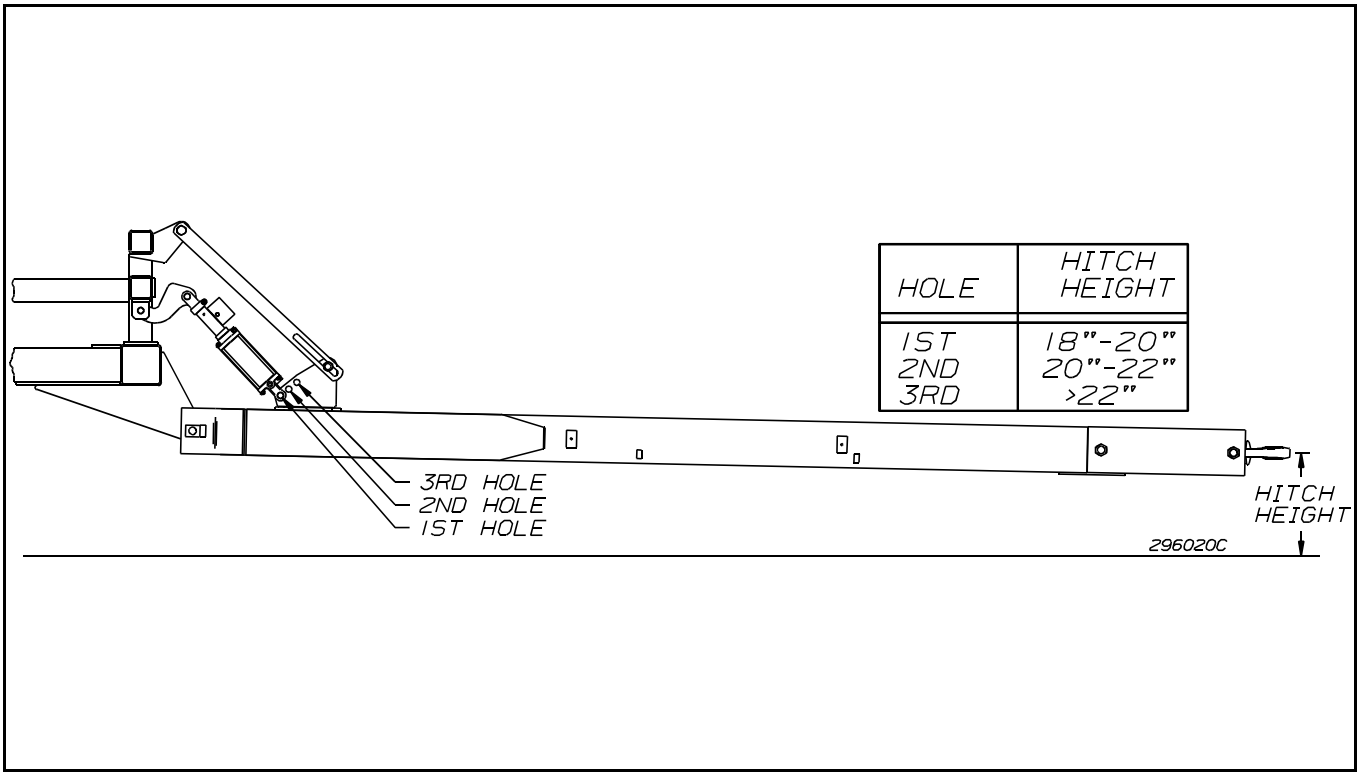
HITCH ADJUSTMENT

The air drill hitch may be adjusted to accommodate various tractor hitch heights. This adjustment allows the implement to be level when in transport position.

1. Position the air drill in field position and locate on level ground. Lower the frame to allow the floating hitch to become operational (float link free to rotate).

2. Remove the snap rings and pins at the base end of the hitch cylinders and position in the hole that matches the tractors hitch height.

3. Engage the lift cylinder and lift the implement to maximum height. Check the center section for front-to-back level. Readjust pin hole location if necessary.



Hitch Leveling Adjustment

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SECTION 5
TROUBLESHOOTING

CONTENTS OF THIS SECTION

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TROUBLESHOOTING TABLE

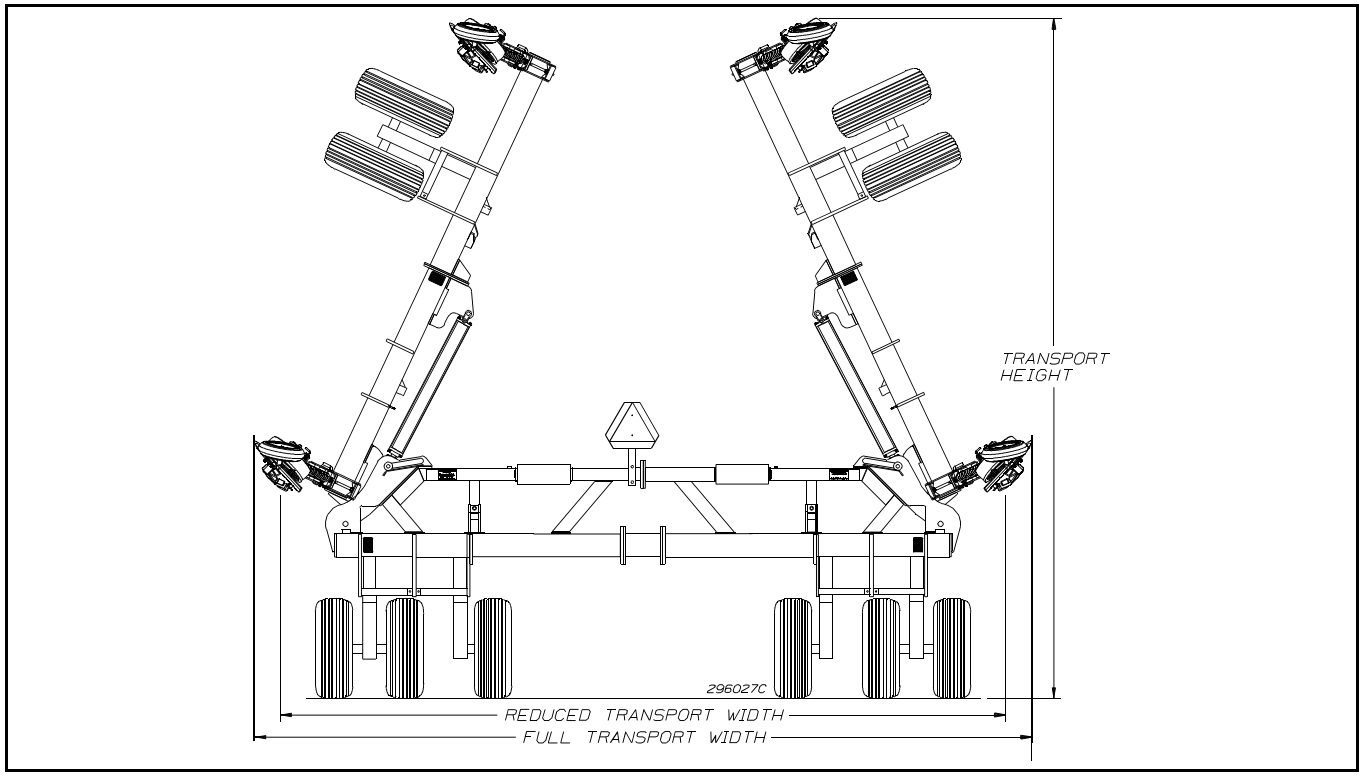
PROBLEM	POSSIBLE CAUSES	POSSIBLE SOLUTIONS
Uneven seeding depth across the implement.	1. Implement is not leveled properly side to side.	1. Level the implement side to side.
	2. Implement not leveled properly from front to rear.	2. Level the implement front to rear.
	3. Openers not set properly.	3. Each opener must be set to the same seeding depth to obtain consistent seed depth. Refer to the opener operator's manual.
	4. Tire pressures not to specification.	4. Check tire pressures and adjust as necessary.
	5. Weight transfer due to draft loads.	5. Implement must ultimately be leveled in actual field conditions at actual working depth.
Uneven seeding depth behind tractor/air cart tires.	1. Soil compaction or deformation due to tractor/air cart tires.	1. Adjust the seeding depth of the openers in the affected zone to obtain the required penetration. Refer to the opener operator's manual. *or* Adjust the down pressure setting of the opener's in the affected zone to obtain the required penetration. Refer to the opener operator's manual.
Seeding depth changing during operation.	1. Hydraulic system is failing due to cylinder failure, depth stop valve failure or tractor hydraulic system failure.	1. Check for external oil leaks on any of the hydraulic components. Check for air entrapped in the hydraulic lines; this can be done by bleeding a line to let air escape.

PROBLEM	POSSIBLE CAUSES	POSSIBLE SOLUTIONS
Implement not level in transport.	1. Hitch hydraulic cylinder base not mounted in the proper lug location.	1. Lug location dependent upon tractor/air cart hitch height. Mount cylinder base in the proper lug location.
Seed depth varies from front to back.	1. Back bar not at the same working level as the front bar 2. Implement does not have enough weight to penetrate soil conditions. 3. Openers not set properly.	1. Check and re-calibrate the front-to-back leveling 2. Extra weight may need to be added to the rear bar. Additional weight packages are available; see your dealer. 3. Down pressure setting on the opener needs to be adjusted.
Seed depth varies from center to wing sections.	1. Wing section is not operating at same level as the center section 2. Wing section does not have enough weight to penetrate soil conditions.	1. Level the air drill. 2. .Extra weight may need to be added to the rear bar of the wing section. Additional weight packages are available; see your dealer.
Depth control safety lock disengages.	1. Depth cylinder safety lock lever not staying in the locked position due to the pivot bolt being loose.	1. Tighten pivot bolt. Be sure you can still rotate the safety lock lever by hand.
Front of implement droops in transport.	1. Hitch cylinders creeping.	1. Hitch cylinder transport locks should be installed when transporting the implement.
Depth stop valve not operating.	1. Depth stop valve not operating due to shear bolt failure.	1. Replace the nylon shear bolt in the depth stop assembly with a new 5/16" x 2" nylon shear bolt.

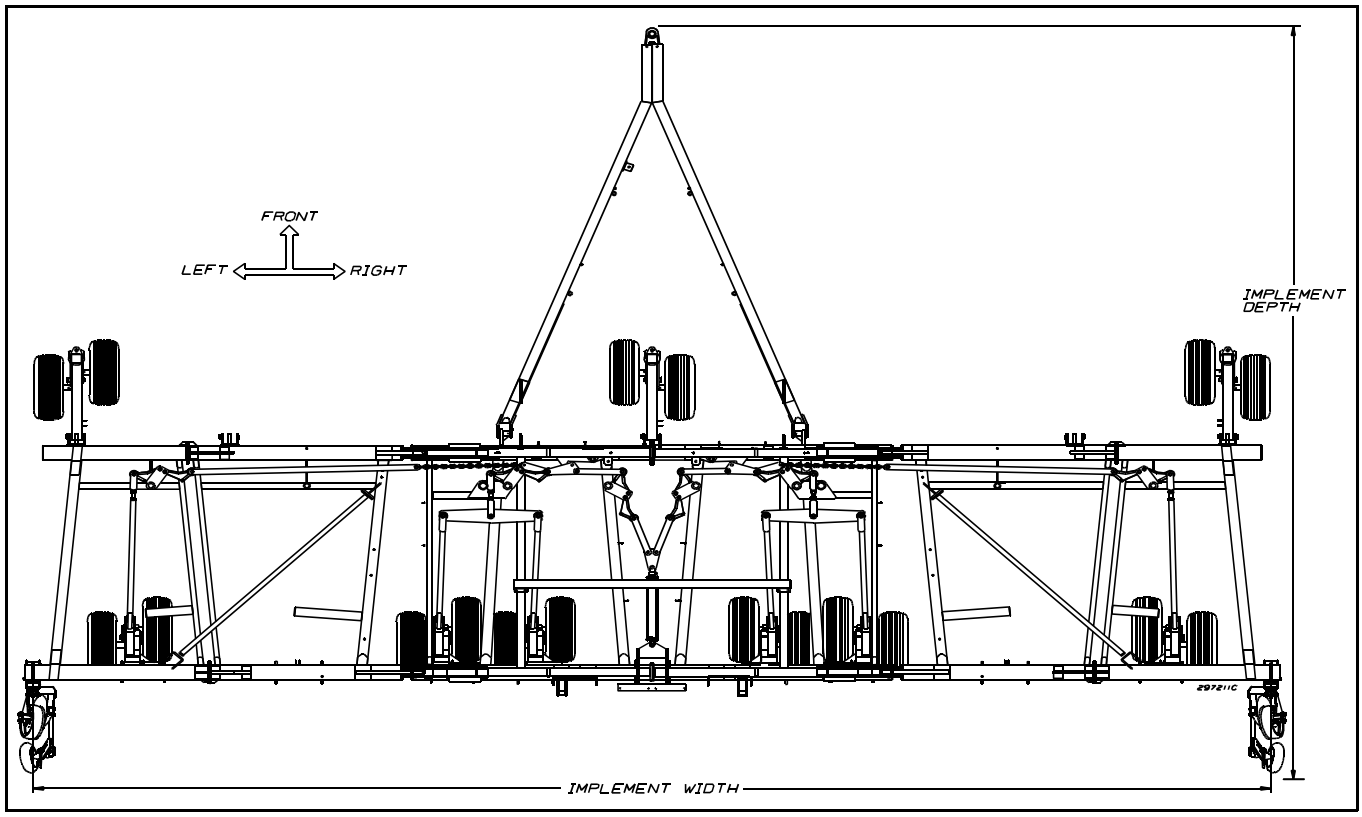
SPECIFICATIONS

CONTENTS OF THIS SECTION

MACHINE DIMENSIONS



No-Till Air Drill Transport Position



No-Till Air Drill Field Position

MACHINE SPECIFICATIONS - METRIC UNITS

NOTE: The transport width can be reduced by raising the Openers and placing the pin in the top hole of the mount channel.

Width (m)	# of Openers		Implement Weight (kg)			Transport width (m)			Transport height (m)		Implement depth (m)	
	Spacing			Spacing								
	19 cm	25.4 cm	Frame	19 cm	25.4 cm	max*	min**	min***	max*	min**	max*	min**
9.1	49	37	6260	9752	8845	6.4	6.0	5.0	3.6	3.4	9.0	8.0
12.2	65	49	6940	11567	10319	6.4	6.0	5.0	5.3	5.0	9.0	8.0

NOTE: * Maximum dimension with Barton Openers.
** Minimum dimension with Barton Openers locked in the transport position.
*** Minimum dimension without Barton Openers.
Specifications subject to change without notice.

MACHINE SPECIFICATIONS - IMPERIAL UNITS

NOTE: The transport width can be reduced by raising the Openers and placing the pin in the top hole of the mount channel.

Width (ft)	# of Openers		Implement Weight (lb)			Transport width (ft)			Transport height (ft)		Implement depth (ft)	
	Spacing			Spacing								
	7.5"	10"	Frame	7.5"	10"	max*	min**	min***	max*	min**	max*	min**
30	49	37	13800	21500	19500	21'	19'10 “	16'6"	11'10"	11'	29'5"	26'
40	65	49	15300	25500	22750	21'	19'10 “	16'6"	17'6"	16'4"	29'5"	26'

NOTE: * Maximum dimension with Barton Openers.
** Minimum dimension with Barton Openers locked in the transport position.
*** Minimum dimension without Barton Openers.
Specifications subject to change without notice.

TIRE PRESSURE AND WHEEL BOLT TORQUE

	Tire Size	Inflation Pressure	Wheel Bolt Torque
Gauge Wheel Casters	9.6L-15 6 ply	220 kPa (32 psi)	108-130 N-m (80 to 96 lbf-ft)
Center Section Wheel Standard	11-15FI range D	410 kPa (60 psi)	149 to 179 N-m (110 to 132 lbf-ft)
Center Section Wheel Standard	11-15FI range F	620 kPa (90 psi)	149 to 179 N-m (110 to 132 lbf-ft)
Wing Wheel Standard	11-15SL utility	250 Kpa (36 psi)	149 to 179 N-m (110 to 132 lbf-ft)

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